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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/071,748	02/08/2002	Noah Nicholson	017201-045900US	2982

20350 7590 05/28/2004

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EXAMINER

FIORILLA, CHRISTOPHER A

ART UNIT	PAPER NUMBER
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1731

DATE MAILED: 05/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/071,748

Applicant(s)

NICHELSON ET AL.

Examiner

Christopher A. Fiorilla

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 and 25-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 25-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

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1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1, 3-11 and 25-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Benker (5,618,767) in view of Chwastiak et al. (5,643,514).

Benker teaches the basic claimed process of producing a reaction bonded silicon carbide body. The process disclosed by Benker includes the steps of:

forming a ceramic slurry by combining:

a carbon source (e.g. col. 4, line 15),
silicon carbide (e.g. col. 4, line 13),
starch (e.g. col. 4, line 18), and
liquid (e.g. col. 4, line 22);

compacting the slurry into a green body (e.g. col. 3, lines 35-41); and

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exposing the green body to liquid silicon metal to produce a reaction bonded silicon carbide body (e.g. col. 3, lines 53-57).

Note that Benker discloses ingredient amounts that appear to lie within the claimed ranges (e.g. see examples) and disclose the addition of water in amounts which can be varied (e.g. col. 3, lines 32-41 and examples).

Benker also discloses the carbon source can be graphite or carbon black (e.g. col. 3, line 22); the starch can be potato, corn or wheat starch (e.g. col. 2, lines 30-33); the application of pressure to the slurry (i.e. pressure casting at col. 3, line 37) and the use of a porous mold (i.e. slip casting at col. 3, line 36-37).

Benker does not specifically disclose the claimed siliconizing temperatures. Chwastiak et al. discloses siliconizing temperatures of 1420-2400°C. It would have been obvious to one having ordinary skill in the art at the time of the invention to siliconize the body of Benker at the temperatures disclosed by Chwastiak et al.

Determination of the specific mold configuration, molding pressures and process times would have been well within the realm of routine experimentation to one having ordinary skill in the art at the time of the invention. These parameters would have obviously been selected to optimize the process conditions and/or the properties of the final product.

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Benker (5,618,767) in view of Chwastiak et al. (5,643,514) as applied to claims 1, 3-11 and 25-32 above, and further in view of Andersen (2,938,807).

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Andersen discloses hexagonal SiC grit (i.e. alpha SiC) is used to produce a reaction bonded silicon carbide. It would have been obvious to use this type of silicon carbide in the process of Benker in view of the generic disclosure therein.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Benker (5,618,767) in view of Chwastiak et al. (5,643,514) as applied to claims 1, 3-11 and 25-32 above, and further in view of Waggoner et al. (2003/0180579).

Waggoner et al. discloses that SiC ceramics are suitable for armor (see e.g. paragraph [0095]). It would have been obvious to one skilled in the art at the time of the invention to use the material of Benker for armor in view of the teaching of Waggoner et al.

6. Applicant's arguments with respect to claims 1-12 have been considered but are moot in view of the new ground(s) of rejection.

Note however, it is necessary to comment on applicants' characterization of the Benker reference. Applicants state that the starch solutions suggested by Benker are more concentrated (i.e. 70 wt% starch and 30 wt.% water) than the ones used in the present invention. It is submitted that this mischaracterizes the disclosure of the reference. For example, Example 1 of Benker discloses the addition of a starch solution as recited above but then further adds more water which dilutes the solution. Further, col. 3, lines 32-41 disclose the addition of more water to allow the use of specific molding techniques.

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7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher A. Fiorilla whose telephone number is (571) 272-1187. The examiner can normally be reached on M-F, 6:30am-3:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven P. Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Christopher A. Fiorilla
Primary Examiner
Art Unit 1731

caf